

TWO NEW PERUVIAN MICROLEPIDOPTERA OF ECONOMIC IMPORTANCE (GELECHIIDAE AND OECOPHORIDAE).

BY AUGUST BUSCK, *U. S. Bureau of Entomology.***Gnорimoschema tuberosella**, new species. (Pl. 1, Figs. 3, 5.)

Second joint of labial palpi whitish ochreous, sprinkled with fuscous; terminal joint ochreous with a broad incomplete black annulation at base and an even broader, likewise incomplete, black annulation just before the tip; extreme apex yellow. Maxillary palpi short but plainly discernible, appressed to base of the spiraled tongue. Antennae ochreous, with narrow black annulation, basal joint long, shaded with dark fuscous. Face iridescent, ochreous white; head and thorax light ochreous, sprinkled with dark fuscous. Fore wing whitish ochreous overlaid with darker ochreous and fuscous scales, especially on dorsal half; a broad, dark brownish-black, oblique streak from basal fourth of costa reaches beyond the cell; it is more strongly emphasized on the cell in an elongate ovate spot of deeper black and fades gradually out in the fuscous scaling on upper half of the wing to apical fourth; at apical fourth is an ill-defined, unmottled costal spot of the ground color; a similar dorsal spot somewhat nearer apex; at the end of the cell a short black streak; a similar black streak before apex is preceded and surrounded by brown scales; cilia light ochreous, dotted with dark fuscous scales. Hind wings broader than fore wings, dark fuscous with ochreous fuscous cilia. Venation typical; fore wing with 12 veins; 1 *b* furcate at base, 1 *c* present on basal half, fading out toward the edge; 2, 3, and 4 equidistant; 5 slightly approximate to 4; 6 free; 7 and 8 stalked to costa; 9 free; 11 from before the middle of cell. Hind wing with 8 veins; 3 and 4 connate; 5 distant but bent toward 4 at base; 6 and 7 parallel; no costal tuft in either sex. Abdomen light ochreous sparsely sprinkled with fuscous; dorsum of first, second, and third joints with the usual velvety, short, yellow scaling common in the genus; first joint sprinkled with black scales. Legs silvery ochreous; tibiae strongly mottled with black exteriorly; front and middle tarsi with black annulations; posterior tibia with long hairs on upper side.

Male genitalia (Pl. 1, Fig. 5) typical of genus; tegumen elongate, with two short, strongly chitinized lateral processes; vinculum, with long, slender anterior process, is fused with the anellus, which is very large and broad and terminates in three processes, a central, very long, strongly chitinized, spike and two lateral shorter, less chitinized, pointed lobes; the aedoeagus is very long, slightly bulbous at base, deeply cleft at apex into two nearly equal forks with the penis opening laterally on the larger fork. Eighth segment strongly developed into a dorsal and a ventral cover for the genitalia when at rest.

Female genitalia (Pl. 1, Fig. 3) with genital plate large and fused with the penultimate joint and its supporting internal rods; ductus bursa a strongly chitinized tube from ostium to the end of the rods, there broadening out into a small, soft, heart-shaped bulb, with a short chitinized center and continued unchitinized to the bursa, which contains a short, stout, spinelike signum.

Alar expanse 15-17 mm.

Type.—U. S. National Museum No. 43309.

Type locality.—Lima, Peru.

Foodplant.—*Solanum tuberosum*.

Received from Dr. Johannes Wille, who reports that the larvae feed not only in the tubers but also in the stalks of cultivated potatoes. The species was previously received from Dr. C. H. T. Townsend, who reported it injurious to potato at Callao, Peru, in 1927.

The species is close to *Gnorimoschema* (*Phthorimaea*) *aquilina* Meyrick, also described from Peru, but is smaller and differs in details of ornamentation as well as in genitalia. This species was described under the generic name *Phthorimaea* Meyrick, but was subsequently placed in *Gnorimoschema* by him in the text of his Revision of the *Gelechiidae*, though his colored figure is named *Phthorimaea*. *Phthorimaea* was originally established on the costal hairtuft in the hind wings of the male of the genotype *P. operculella*, but this character is not found in most of the species now included in the genus, and Meyrick has attempted to differentiate between this genus and *Gnorimoschema* Busck on slight differences in the length and scaling of the terminal joint of the labial palpi, differences, however, which do not hold, but appear in gradual modification in all the species included in both genera. In all important characters of the oral parts, the venation, and the genitalia, *operculella* and most of the species placed with it conform with *Gnorimoschema*, and the writer, therefore, reluctantly abandons the well-known name *Phthorimaea* for the other "well-known form" *Gnorimoschema* Busck, which has two years' priority. A few of the species placed in *Phthorimaea*, like *glocharella* Zeller and *lycopersicella* Busck, differ from the types and the bulk of the species in possessing a strong hook-like uncus, instead of the normal hoodlike uncus characteristic of the genus, and these may eventually require a new generic name. (See Busck, Proc. Haw. Ent. Soc., vol. 7, p. 173, 1928.)

Euclodora coca, new species. (Pl. 1, Figs. 1, 2, 4, and 6.)

Labial palpi long, recurved; second joint thickened, with smoothly appressed scales, slightly serrated below and at apex; light ochreous brown on inner side, darker brown exteriorly, with the scales white tipped, so as to form an ill-defined transverse striation; terminal joint as long as second, thickened, with long loose scales on posterior edge, smooth anteriorly (Pl. 1, Fig. 2), reddish brown with posterior tuft dark fuscous, extreme apex acute, light whitish ochreous. Antennae slightly longer than fore wing, serrate, especially toward the tip, brown with light ochreous underside; no pecten on basal joint. Face smooth, light ochreous; head brown with spreading side tufts extending over the basal joint of the antennae. Thorax light brown, smooth. Fore wing elongate, costa slightly arched; apex falcate, termen deeply and abruptly ex-

cavated below apex, thence broadly rounded at tornus; dorsum straight; on costal base a light ochreous patch extended in an oblique streak to middle of dorsum; dorsal base dark brown; at costal third a broad, trapezoidal, bluish patch terminated on the middle of costa by two outwardly oblique, light yellow streaks; these reach nearly to the end of the cell and are separated by a narrow bluish metallic streak and edged exteriorly with white scales on the costa; beyond these streaks the wing is rich brown with a blackish brown, longitudinal, central line before apex and mottled with light ochreous; below the trapezoidal costal patch is an elongate, oval, deep brown spot; cilia brown, with a yellow tuft below the falcate apex, and with base yellow edged by a perpendicular black line. Hind wing with costa and dorsum nearly straight, termen obliquely rounded, apex blunt; dark lead-colored; cilia dark fuscous, light ochreous at the tip of the wing; in male with a strong expansible, light ochreous hair-pencil from base of costa, reaching beyond the middle of costa.

Venation typical (Pl. 1, Fig. 4); fore wing with 12 veins, 1 *b* single at base, the upper fork being obsolete; 1 *c* present at outer half to edge of wing; 2 from just before the end of the cell; 3 and 4 closely approximate from the end of the cell; 5 and 6 parallel, widely separated; 7 and 8 stalked to costa; 11 from middle of cell.

Hind wing with 8 veins; 3 and 4 shortstalked; 5, 6, and 7 parallel; 5 nearer to 6 than to 4 and 6 nearer to 5 than to 7.

Abdomen dark fuscous above, with light ochreous underside. Legs whitish ochreous on their inner sides; anterior tarsi thickened exteriorly, with light brown scales; middle and hind tarsi dark fuscous exteriorly with narrow bars of white; tarsi dark fuscous, whitish ochreous annulations.

Male genitalia (Pl. 1, Fig. 6) with tegumen rectangular, ending in two shallow soft lobes hardly differentiated enough to be termed uncus; socii absent; gnathos divided into two shortstalked, elongate, egg-shaped tassels from the corners of the tegumen, curiously ornamented with large rough scales, arranged in a close spiral; it may be argued that these organs are the socii and not the gnathos, but I judge that they correspond to the similar scaled, unpaired, knobbed tip of the gnathos typical of many Oecophorids, and which in many forms tend to become divided; harpes narrow and divided on their outer half into two short, hairy lateral lobes; aedocagus straight, bulky, with very large oval opening for the penis, extending more than half the length of the whole aedocagus.

Female genitalia (Pl. 1, Fig. 1) with ostium simple; ductus rather long, spiraled on itself in two close loops and with a short chitinized ring near ostium; bursa elongate ovate; signum an elongate oval plate with two (or three?) short but heavy double spines.

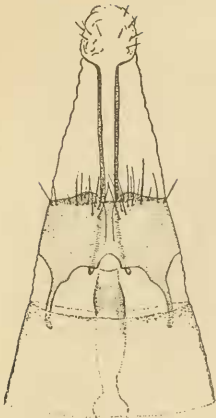
Alar expanse.—11–12.5 mm.

Type.—U. S. National Museum No. 43310.

Type locality.—Otuzco, Peru.

Foodplant.—*Erytroxylon coca* (Johannes Wille).

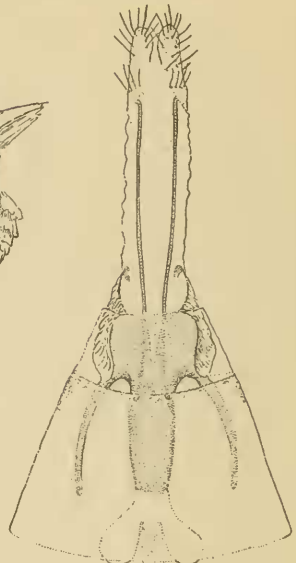
Doctor Wille reports that the larvae feed on the leaves of the coca plant and that the damage caused by them amounts to about 60 per cent of the harvest in the height of the season and to about 20 per cent in the winter months.



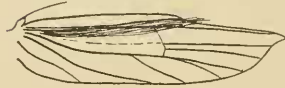
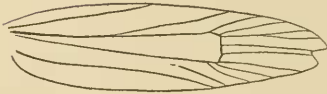
1. *cocae*



2. *cocae*



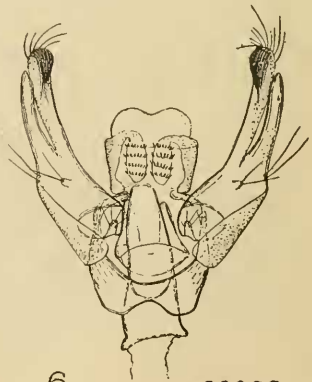
3. *tuberosella*



4. *cocae*



5. *tuberosella*



6. *cocae*

Meyrick has erected the genus *Psittacastis* for the American representatives of the African genus *Eucleodora* Walsingham, on the smooth terminal joint of the labial palpi (versus the posteriorly tufted third joints of *Eucleodora*). The genotypes of both *Psittacastis* and its synonym, *Necedes* Walsingham, have truly smooth terminal labial joints at once distinguishable from those of the present species, which perforce must go in *Eucleodora*. The several described and undescribed species of this immediate group, characterized by the falcate fore wing with the striking involved color-ornamentation, are very similar in all the other characters and especially in the genitalia, though amply differentiated specifically, both in genitalia and in details of coloration of wings, palpi, and legs.

EXPLANATION OF PLATE

Drawings made by Mrs. Eleanor A. Carlin under the direction of the author.

1. *Eucleodora cocae* Busck. Female genitalia.
2. *Eucleodora cocae* Busck. Head and labial palpi.
3. *Gnorimoschema tuberosella* Busck. Female genitalia.
4. *Eucleodora cocae* Busck. Wing venation.
5. *Gnorimoschema tuberosella* Busck. Male genitalia.
6. *Eucleodora cocae* Busck. Male genitalia

THOMAS SAY, EARLY AMERICAN NATURALIST, BY HARRY B. WEISS AND GRACE M. ZIEGLER. Charles C. Thomas, Springfield, Ill., 260 pages, 27 illustrations.

A delightful, authentic biography; entirely uncolored by personal opinion.

Here the reader may see the personality of Thomas Say emerge from the dust and cobwebs of a century, as the gentle, amiable, steadfast naturalist that he was. No dashing lusty giant such as Audubon was he. Rather poorly endowed with physical stamina, through sheer love of his calling and the exercise of a dogged continuity of purpose throughout his short lifetime of 47 years, he accomplished more than do many stronger men who attain to twice that span.

Surmounting the respect which his ability as a naturalist evoked from his intimates, there is in plain view the fact that he possessed their warmest affection and confidence in a degree which is the infallible index to an unselfish soul. Say's letters breathe consistently a spirit of honesty and mutual aid and reveal, at the age of 29, a store of wisdom and caution which is most admirable in the descriptive naturalist. Evidently realizing that he faced a vast and but slightly worked field for descriptive writing, he deliberately refused to run amok in it, as is shown by the following excerpt from a letter addressed to his friend Melshimer: